CLAIMS

Having described the invention, what is claimed is as follows:

1. A portable foldable ramp comprising

first, second, third and fourth ramp sections, each section comprising a runway with an top surface and a lower surface and longitudinal first and second ends,

a hinge connecting each pair of adjacent ramp sections end to end longitudinally, including a hinge bar,

end members on ramp section longitudinal first and second ends adapted with opposing end members of adjacent sections directly abutting together when the ramp is unfolded, rotating on said hinges into and out of abutment such that load forces are conveyed through abutted sections to ramp ends, said hinge spaced apart from said end members so as not to interfere with said end member abutment,

wherein said hinges respectively connecting the abutting section ends are disposed under section runway lower surfaces such that all sections curl together in a same first direction of rotation to fold and uncurl in a second direction of rotation opposite said first direction of rotation to unfold, a runway undersurface of the first section at a ramp first end folding into parallel face-to-face opposition with a runway undersurface of the second section forming a pair of sections, said pair of sections

rotating with the top surface of said first section folding into parallel face-to-face opposition with the bottom surface of the third section forming a trio of sections, said trio of sections rotating with the upper section of said second section folding into parallel face-to-face opposition with the bottom surface of the fourth section forming a compact quartet of sections.

2. The portable foldable ramp of claim 1 in which the end members come into abutment with adjacent sections unfolded to less than 180 degrees, the sections collectively forming an approximate arc bowed downward.

3. The portable foldable ramp of claim 1 further comprising strengthening ribs extending longitudinally along the respective runway bottom surfaces between section end members with the respective hinge bars passing through rib holes on one end and with rib hinge ears on another end extending from the ribs beyond the section ends to the respective hinge bar which passes through holes in the rib ears in like manner of the section panels.

4. The portable foldable ramp of claim 1 wherein the hinges are spaced apart from the runway bottom surfaces respective measured distances such that the ramp folds in curling fashion with sections in stacked nesting with section surfaces into close face-to-face opposition.

5. The portable foldable ramp of claim 1 wherein each section comprises a plurality of inverted open boxes with longitudinal ends of boxes collectively comprising section end members, with outer lateral sides of outer boxes

comprising section panels, and with inner lateral sides of boxes forming longitudinal strengthening ribs.

6. The portable foldable ramp of claim 1 wherein the hinge comprises

said hinge bar passing through section hinge holes in a hinge plate extending vertically downward under the runway lower surface of a first, or lower, section inward the first section from a first section end member on a first section first end, and

a hinge ear on a second end of a second, or upper, section adjacent the first section extending longitudinally downward from the second section under the runway lower surface of the first section aligning holes in the hinge plate and the hinge ear through which the hinge bar passes such that when the second section folds under the first section it is inward of the end member at the first section first end.

7. The portable foldable ramp of claim 6 wherein each second section of an adjacent pair is smaller than its subsequent adjacent first section such that it fits within it.

8. The portable foldable ramp of claim 6 wherein said hinge ears of said second adjacent section fit on the hinge bar inward of the hinge plate of the first adjacent section.

9. The portable foldable ramp of claim 6 wherein the sections further comprise vertical panels on section lateral sides from which the hinge ears and hinge plates extend.

10. The portable foldable ramp of claim 9 wherein the section panels of each side slide in scissor-like fashion with respective section panels of an adjacent section upon ramp folding, mutually aligning the folding sections.

11. The portable foldable ramp of claim 1 further comprising a wheel on each side of the third section near its end adjacent the second section extending beyond said end such that when the third section is folded into the fourth section, the folded ramp is wheelable on said wheels.

12. The portable foldable ramp of claim 11 wherein the fourth section is of length such that the folded ramp stands freely on its wheels and the fourth section distal end.

13. The portable ramp of claim 11 wherein the hinge bar between third and fourth sections is accessible as a handle in negotiating the wheelable folded ramp.

14. The portable foldable ramp of claim 3 wherein ribs of adjacent panels fold side by side in scissor-like fashion in aligning the sections during folding.

15. The portable foldable ramp of claim 14 wherein each first section rib comprises first and second parallel spaced apart rib members forming a slot therebetween aligned with a rib of the third section such that upon folding the first and second sections as a pair into nesting configuration with the third section, the ribs of the third section move into said first section slots, therein enabling the first section runway top surface to move into close parallel opposition with the third section lower surface impeded by third section ribs.

16. The portable foldable ramp of claim 14 wherein each second section rib comprises first and second parallel spaced apart rib members forming a slot therebetween aligned with a rib of the fourth section such that upon folding the first, second and third sections as a trio into nesting configuration with the fourth section, the ribs of the fourth section move into said second section slots, therein enabling the second section runway top surface to move into close parallel opposition with the fourth section lower surface impeded by fourth section ribs.

17. A portable foldable ramp comprising multiple segments hinged end to end and foldable on hinges, sections decreasing in size from a largest section on a first ramp end to a smallest section on a second ramp end, the ramp curling in folding beginning with the smallest section nesting in a next larger adjacent section until the two largest section on the first end sandwich the smaller sections nested therebetween with all sections in parallel disposition.

18. The portable foldable ramp section of claim 17 wherein all sections curl relatively in the same first rotational direction in folding, and in a same second rotational directional opposite the first rotational direction in unfolding, limited in unfolding rotation by section end to end abutment.

19. A portable foldable ramp comprising

first, second, third and fourth ramp sections, each section comprising a runway with an top surface and a lower surface and longitudinal first and second ends,

a hinge connecting each pair of adjacent ramp sections end to end longitudinally,

end members on ramp section longitudinal first and second ends adapted with opposing end members of adjacent sections directly abutting together when the ramp is unfolded, rotating on said hinges into and out of abutment such that load forces are conveyed through abutted sections to ramp ends, said hinge spaced apart from said end members so as not to interfere with said end member abutment,

wherein said hinges respectively connecting the abutting section ends are disposed under section runway lower surfaces such that all sections curl together in a same first direction of rotation to fold and uncurl in a second direction of rotation opposite said first direction of rotation to unfold, a runway undersurface of the first section at a ramp first end folding into parallel face-to-face opposition with a runway undersurface of the second section forming a pair of sections, said pair of sections rotating with the top surface of said first section folding into parallel face-to-face opposition with the bottom surface of the third section forming a trio of sections, said trio of sections rotating with the upper section of said second section folding into parallel face-to-face opposition with the bottom surface of the fourth section forming a compact quartet of sections,

wherein the end members come into abutment with adjacent sections unfolded to less than 180 degrees, the sections collectively forming an approximate arc bowed downward,

and wherein the hinge comprises

a hinge bar passing through section hinge holes in a hinge plate extending vertically downward under the runway lower surface of a first adjacent section of an adjacent pair inward the first section from a first section end member on a first section first end, and

a hinge ear on a second end of a second adjacent section of said adjacent pair extending longitudinally outward from the second section under the runway lower surface of the first adjacent section aligning holes in the hinge plate and the hinge ear of the adjacent pair through which the hinge bar passes such that when the second adjacent section folds under the first adjacent section it is inward of the end member at the first adjacent section first end,

the sections further comprising vertical panels on section lateral sides from which the hinge ears and hinge plates extend, wherein the section panels of each side slide in scissor-like fashion with respective section panels of an adjacent section upon ramp folding, mutually aligning the folding sections,

wherein the hinges are spaced apart from the runway bottom surfaces respective measured distances such that the ramp folds in curling

fashion with sections in stacked nesting with section surfaces into close face-to-face opposition,

strengthening ribs extending longitudinally along the respective runway bottom surfaces between section end members with the respective hinge bars passing through rib holes on one end and with rib hinge ears on another end extending from the ribs beyond the section ends to the respective hinge bar which passes through holes in the rib ears in like manner of the section panels, wherein ribs of adjacent panels fold side by side in scissor-like fashion in aligning the sections during folding, wherein each first section rib comprises first and second parallel spaced apart rib members forming a slot therebetween aligned with a rib of the third section such that upon folding the first and second sections as a pair into nesting configuration with the third section, the ribs of the third section move into said first section slots, therein enabling the first section runway top surface to move into close parallel opposition with the third section lower surface impeded by third section ribs, and wherein each second section rib comprises first and second parallel spaced apart rib members forming a slot therebetween aligned with a rib of the fourth section such that upon folding the first, second and third sections as a trio into nesting configuration with the fourth section, the ribs of the fourth section move into said second section slots, therein enabling the second section runway top surface

to move into close parallel opposition with the fourth section lower surface impeded by fourth section ribs.

20. The portable foldable ramp of claim 19 wherein the slots of said first and second sections divide the section runway into an inner surface sandwiched between outer surfaces.

21. The portable foldable ramp of claim 20 wherein the inner surface is different from the outer surfaces.